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## ABSTRACT

A hypothetical model is given for a National Serials Data System based on the best educated guesses of what the system should do and how, therefore, it should function. The model focuses attention on the ultimate goal rather than on the decision-making processes relating to choice of data elements, unique identification codes, etc. This conceptual presentation proceeds from the following set of propositions: (1) the primary function of a National Serials Data System should be to provide for the identification of serials titles and to provide a means of locating their holdings among the participating libraries; (2) the provision of data relating to or supporting the processing of serials in libraries; (3) provision of searchable data relating to the intrinsic characteristics of serials publications for analysis or study; (4) prompt development of a strategy controlling the initial and subsequent definitions of scope of coverage for the system; (5) a decentralized, rather than centralized, service network is preferable for the system; (6) deciding among alternative strategies; (7) standardization of the data elements, tape format and character set required for the core identification and location module and (8) development of a strong central management component to ensure the system's performance, technical controls and further development. (NH)

PROPOSAL FOR A NATIONAL SERIALS DATA SYSTEM

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Basic to systems design is a preliminary conceptualization of a functional model of the system. The conceptualization may and should be modified in the light of facts derived from testing of the model, but the model should pre-exist, or the system under development lacks a commonly understood goal.

Despite the amount of attention given to the National Serials Data Program by various groups, this conceptualization has yet to be accomplished. Much more attention has been given to the desirability of specific data elements than to the overall functions we wish the system to perform. The specification of elements for an unspecified system threaten to entrap us in metaphysical arguments more appropriate to medieval scholasticism than to contemporary systems design.

There is clearly need for a hypothetical model of the system, based on our best educated guesses of what we want the system to do for us, and how, therefore, it should function. Of necessity, such hypothetical models must be based on the establishment of arbitrary priorities, and inclusions and exclusions. No conceivable system can do all things for all people at once.

What is presented here, for purposes of discussions, is one conceptualization of a National Serials Data System. It is presented for the purpose of focusing attention on the ultimate goal, on a national serials data system as it might function, rather than on the decision-making processes relating to choice of data elements, unique identification codes, etc.

This conceptual model proceeds from a set of propositions, which represent the establishment of the arbitrary priorities and exclusions mentioned above. Each of these propositions is arguable, but there appears to be a strong body of experience and judgment to defend them.

#### Proposition I

The primary function of a National Serials Data System should be to provide for the identification of serials titles and to provide a means of locating their holdings among the participating libraries.

These are the classic functions performed by the published Union List of Serials, by regional and local union lists, and by New Serial Titles. They are also the functions assumed to have priority by the Joint Committee on the Union List of Serials, by COSATI, and by the sponsors of the National Serials Data Program.

Many technical problems relating to this function are unresolved: the source and character of the unique identifying number; the extent to which cataloging authority is a function of unique identification; the most desirable strategy for conversion of existing files of serials information.

Nonetheless, in systems terms, the subsystem or module constructed for this function is basic to the national system, and its attainment should have top priority.

Proposition 2

The provision of data relating to or supporting the processing of serials in libraries is a secondary function.

A high percentage of desirable elements reported in the Nelson survey (1) relate to the internal processing of serials. For several reasons, however, it is inadvisable to include these in a priority effort:

- a. the variety of local processing procedures makes agreement difficult to achieve;
- b. The number of libraries prepared to employ them is limited;
- c. the effectiveness and economy of serials processing systems has yet to be demonstrated.

A systems module for serials processing (a) is dependent on the core module for identification, and (b) should provide flexibility to accommodate to local practice. It should come as a later or "add-on" module, and should, as MARC II does, provide for flexibility in its local applications.

Proposition 3

The provision of searchable data relating to the intrinsic characteristics of serials publications for purpose of analysis or study is a secondary objective.

(1) The National Serials Data Program; A Survey of User Interests- Washington, Nelson Associates, Inc., 1968.

The abstracting and indexing services and others have supported the inclusion of information relating to the intrinsic characteristics of serials -- do they, for example, provide author abstracts? The interest is strongest in science and technology, whose serial literature constitutes a sub-set of all serials. It is not necessary that the total file have such provisions, and the costs of reprocessing sub-sets of serials, once the basic identification module has been created, are more easily met in science and technology.

As a secondary objective, therefore, a systems module should be developed as an "add-on." This module could be utilized to manipulate those data elements required for the analysis and study of intrinsic characteristics of serials where this is needed and justified.

#### Proposition 4

A strategy controlling the initial and subsequent definitions of scope of coverage for the National Serials Data System should be promptly developed.

The System should be built on arbitrarily determined priorities; it cannot be all things to all people at once.

Initially, a strategy for inclusion might be based on the live titles included in the third edition of the Union List of Serials and in its successor, New Serial Titles. While these two publications differ in types of serials included, they do have the advantage of representing an established and accepted universe. (2)

- (2) It should be noted that Kuhlman reported (1967) 93% of 756 respondents reported satisfaction with the scope of NST. See Kuhlman, A. F. "A Report on the Consumer Survey of New Serial Titles." Joint Committee on the Union List of Serials, 1967, page 6.

Broadening of the scope before conversion of serials in these two publications (e. g. to include newspapers) must be resisted. Provision can be made in a long-range strategy for broadening the scope of coverage through "add-on" modules.

Proposition 5

A decentralized service network for the National Serials Data System is preferable to a single centralized operation.

The system should be so designed as to give prompt response to any user institution in the country desiring to locate any issue of any serial. Computer systems technology offers the possibility of fractionating holdings information in a combination of interconnected regionalized files capable of providing prompt local response.

Decentralization of the national file to regional "service bureaus," based on existing institutions has the following advantages:

- a. Prompt response to local and regional demands.
- b. Encouragement of local and regional participation in the creation of a national system.
- c. Ability to produce economically products for local and regional use.
- d. The costs of file maintenance of a decentralized system will be less than those in a giant centralized system.

Proposition 6

Priority attention should be given to decision among alternative strategies:

- a. for conversion of a critical mass of title identification information;
- b. for the collection and posting of library holdings information.

Close study should be made of the optimum use of existing machine-readable files of title and holdings information through the development of conversion programs. Alternative strategies were suggested in the IDC Survey. (3) These, and others, should be carefully investigated, and priced, in order that a decision can be reached on the most technically and economically feasible approach to developing the files of the National Serials Data System.

A corollary study should be made of the optimum strategies for updating the system with new title information (based on NST), and on the means, and periodicity of updating holdings records.

#### Proposition 7

Top priority should be given to the standardization of the data elements, tape format, and character set required for the core identification and location module.

Publication of these standards should be accomplished as soon as is humanly possible to provide guidance for the multiple local and regional serials data programs now under development or in their planning stages.

#### Proposition 8

Any operating system must have a strong central management component to ensure its performance, its technical controls, and its further development.

- (3) Creager, W. A. & Sparks, D. E. A Serials Data Program for Science and Technology. Final Report to the National Science Foundation. Information Dynamics Corporation, 1965 (Contract NSF-C-413).

The earlier editions of the Union List of Serials were projects which terminated with publication. Their organization and management patterns reflect the temporal character of projects. New Serial Titles has a continuing management device based on the Library of Congress, but its scope, in terms of libraries reporting holdings is limited.

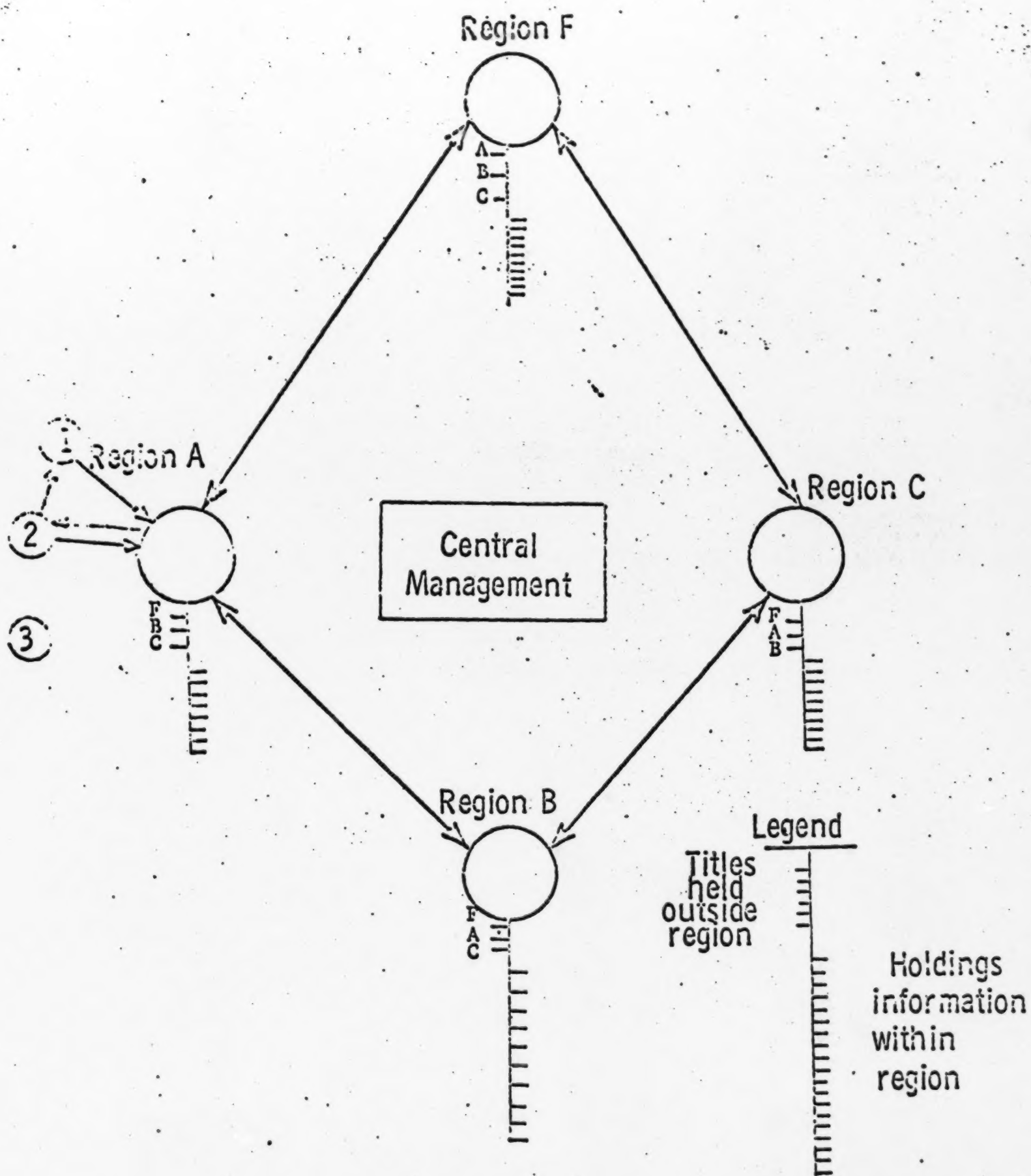
A continuing open-ended computer-based system to report all holdings of all participating libraries requires management controls of a different magnitude and character.

Proceeding from this set of propositions (or assumptions), we should be concerned with the development of a decentralized service system, with centralized management controls, whose primary function it will be to identify and locate serial publications in American libraries for purposes of interlibrary lending. The system, as a second priority, will develop modules and programs which may be utilized by libraries and by abstracting and indexing services for purposes of local processing and analysis. It should, if possible, sustain itself economically.

The following functional diagram sketches one such system:

(see page 8)

## PROPOSED NATIONAL SERIALS DATA SYSTEMS



## NATIONAL SERIALS DATA SYSTEM

The system would have the following organizational elements:

1. Regional processing and service agencies. (A, B, C, F) Each such agency would maintain and service files, which would have serials identification and location information as follows:
    - a. For all participating libraries within its region, detailed information on their retrospective holdings to an agreed date (e.g. five years before current date), supplemented by "currently received" information to present.
    - b. Records of all titles held by any region in the total system, together with an indicator as to the region or regions reporting holdings. The regional files will not carry holdings information for libraries external to the region.
  2. The Federal Component, to be considered as a separate region with certain added functions. This region, which will include LC, NAL, NLM, and other Federal libraries with significant and available holdings, will, similar to other regions, provide retrospective and currently received holdings information for its member libraries and other titles tagged to show the regions reporting holdings.
- In addition, the Federal region will be responsible for continuing the "New Serials Titles" function, which will be converted to the initiation of file maintenance, updating the files of all regional components with new title information.

3. A centralized management component, which will have the functions of establishing and maintaining policies, standards and procedures for the national system, of assisting in the organization and funding of regional components, and of conducting developmental efforts directed toward updating and improving the national system.

#### Serials Location Function

The National Serials Data System would operate to locate serials required for interlibrary loans, would initiate requests for them and would provide for collections and payments of fees and charges made and accepted by its members. In exercising this function, the system would operate along the following lines:

1. Library No. 1 in Region A wishes to borrow a serial publication at minimum expense and time.
2. Library No. 1 verifies the citation to the best of its ability and sends by mail or TWX (dataphone in future) a request in standard format to Region A. It indicates whether it will accept photoduplication in lieu of loan and maximum charge it is willing to pay.
3. On receipt, Region A key-punches the request, batches it with others and searches its holdings files.
4. It locates holdings in Libraries No. 2, 3, and 4; Library 2 being nearest to Library 1. It refers the request automatically to Library 2 with a request to report. If the request is available Library 2, it is dispatched to Library 1. Library 2 notifies Region A of the dispatch and the costs.

5. If it is not available in Library 2, a negative report to Region A triggers a referral to Library 3 where the processing continues.
6. If Region A in its search does not locate a library in its region reporting holdings, the request is automatically referred to the nearest region (Region B) or to the Federal Region (Region F) which reiterates the procedure.
7. The individual libraries assume responsibility for details relating to the interlibrary transactions (overdues, etc.) once it has been initiated.
8. Region A functions as a clearinghouse in totalling charges to be levied against the receiving libraries and payments to be made to the lending libraries. This information is derived from the transaction cost information reported by the sending library. Once a month Region A submits bills and makes payments. Presumably it would impose a modest service charge per transaction.

#### Union List Publishing Function

Region A would function to produce and publish segmental union lists for the interested libraries in its region.

1. For geographic list (e.g.) those of a single university system, or a metropolitan area or of the total region, Region A would search its files by institution, meld the products, and through photocomposition prepare camera-copy for such list. The costs would be borne by the institutions participating.
2. For subject lists, Region A would search its files by subject descriptors (L.C. classification, or subject headings) and

would format and photocompose the required list. The costs would be borne by the beneficiary groups.

3. If a national union list of serials in published form should become necessary, it can be assembled through a large scale melding program whereby each region contributes its holdings tapes to a central operation, which is then responsible for the interfiling of holdings information and the photocomposition of the desired product.

#### New Serials Title Function

It is proposed that the Library of Congress, acting as a constituent of Region F, the Federal Region, continue its responsibility for the preparation of a published New Serials Titles. Such publication would be accomplished by distribution of machine-readable information for the bibliographic elements for all New Serial Titles to each of the other regions. The published version of New Serial Titles would be used as notification to the libraries in the region to report their holdings on the New Serial Titles they acquire to the Regional Central Information Function.

#### Management Function

The management function divides into two phases which may or may not be managed by the same agency.

The first phase, that of systems development, involves the planning and testing of alternative systems designs, the determination of strategies for conversion of a critical mass of title identification and holdings information, the standardization of the data elements, tape formats and character set to be utilized by the system, the definition of its initial scope and of strategies for enlarging its scope.

The fundamental management requirements during this first phase are:

1. Ability to identify and quantify the national service requirements to be placed on the system.
2. Ability to make clear-cut responsible decisions on priorities among the objectives, alternative designs and strategies.
3. Technical proficiency in systems design.

Possible management agents during this development phase are:

1. The Library of Congress, acting alone.
2. The Three National Libraries acting in consort.
3. The Joint Committee on Union List of Serials.
4. An existing agency (e. g. Center for Research Libraries).
5. A new agency (e. g. a contractor or a Government corporation).

The advantages and shortcomings of each of the above possible agencies should be critically examined. In addition, the desirability of having the agency selected for the developmental phase continue to function as systems manager during the operational phase should be studied.

The selection of a management agent for one or both phases should be a determination made by the funding agencies, with the advice of all interested parties.

During the operational phase, management responsibilities take on new dimensions. These include:

1. The organization, establishment and funding of the regional service components.
2. The formulation of operating policies for the regional service components, for individual library participation in the system, and for system products and services.
3. The creation and maintenance of technical standards for the system as a whole.

4. The maintenance of procedures for new and changed title updating, and research and development related to the updating of the system's technology.
5. Planning for the future development of the system.

In addition to the managerial requirements for the first or developmental phase, these operating functions suggest added criteria for the selection of a systems manager.

1. Systems management should both command and exercise authority. It must earn and retain the professional respect of the community it services.
2. Management should have the skills to permit it to operate successfully at various levels of government (Federal, State, local), in the university community, and with private philanthropy. This requirement relates both to the increase of participation, and the funding function.
3. Management should have a systems development component to enable it to guide the technical evolution of the system.
4. Planning for the future development of the system.
5. Research and development related to updating the system's technology in that it is representative of multiple library interests.

The capabilities of the five potential management candidates suggested for the development phase should be carefully studied in the light of these management requirements.

The success or failure of the system depends on the ability of its managers

1. To plan for systems development.

2. To promote adherence to the system.
3. To administer the system efficiently.
4. To acquire funding to operate the system.

Funding, as indicated above, the costs of systems development and capital cost of establishing this system should be met from Federal sources. However, once the system is operating, it is to everybody's advantage to build in as much cost recovery as possible. Potential sources of revenue to defray cost of operation are:

1. Membership fees from participating libraries. Each library in the service area of a region would be assessed a pre-determined sum for the support of the region's sub-system.
2. Handling charges. Each library using the system would be assessed a percentage figure on each transaction to defray the cost of the fiscal accountability clearinghouse function.
3. Federal contributions would continue to be made.